DOCUMENT RESUME

ED 245 651 HE 017 418

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TITLE Impacts of Undergraduate Experiences on Educational Aspirations and Plans.
PUB DATE Apr 84
NOTE 41p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984). This document reports on an analysis of data gathered under the National Institute of Mental Health Grant #MH16026 and NIAAA Grant #AA02863.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Aspiration; Comparative Analysis; *Educational Attainment; Females; Higher Education; Longitudinal Studies; Males; *Sex Differences; *Undergraduate Students

ABSTRACT

The educational aspirations and graduate school plans of 404 undergraduates at two universities were studied. Separate analyses were conducted for the 190 males and the 214 females who attended either a large, rural, public institution or a smaller, urban, church-related college. It was found that both men's and women's aspirations rose between the freshman and senior years, although men's aspirations were higher at each time. Causal analysis of these patterns suggests that academic performance, parental supportiveness, and major department context played significant roles in the attainment-related outcomes of graduating college men, beyond the role played by the men's freshman year background characteristics. Among the graduating women, the roles of academic performance and the major department context were less significant than among the males, but the role of parental supportiveness was more significant. It is suggested that the large differences found for men and women argue strongly for greater attention to gender differences in post-college educational attainment processes. A model for the longitudinal study of impacts on undergraduates' educational aspirations and plans is also proposed. (Author/SW)

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IMPACTS OF UNDERGRADUATE EXPERIENCES ON EDUCATIONAL ASPIRATIONS AND PLANS*

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Paper for Presentation at the Annual Meeting of the
American Educational Research Association, New Orleans
April, 1984

HE 017 418

* This manuscript reports on an analysis of data gathered under NIMH Grant MH16026 and NIAAA Grant AA02863, awarded to Professor Rudolf Moos of Stanford University. The data were collected and organized by the staff of the Social Ecology Laboratory, Stanford University. The author is grateful for the support of the above individuals and organizations and for the subsequent help of Larry Haffner, Dean Nielsen, Susan Olzak, and Susan Urahn. Of course, any errors, and the viewpoints expressed, are the author's alone.

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Impacts of Undergraduate Experiences

on Educational Aspirations and Plans

Abstract

This paper describes a longitudinal study of the educational aspirations and graduate school plans of 404 undergraduates at two universities. The analysis was conducted separately for males (n=190) and females (n=214). Both men's and women's aspirations rose between the freshman and senior years, although men's were higher at each time. Causal analysis of these patterns suggests that academic performance, parental supportiveness, and major department context played significant roles in the attainment-related outcomes of graduating college men, beyond the role played by the men's freshman year background characteristics. Among the graduating women, the roles of academic performance and the major department context were less significant than among the males, but the role of parental supportiveness was more significant. The stark differences in the results for men and women argue strongly for greater attention to gender differences in post-college educational attainment processes.

Impacts of Undergraduate Experiences On Educational Aspirations and Plans

To the extent analysts of educational attainment have examined the effects of proximal factors on students' educational plans and outcomes, they have tended to focus on secondary schools (e.g., see Hauser, Sewell, and Alwin, 1976; Coleman et al., 1966; Bowles and Gintis, 1976; Alexander and Eckland, 1974; Sewell, 1971). Analyses at this level of schooling have often employed causal models blending distal factors (such as school climate, SES composition, and student/teacher ratio) with more proximal factors such as classroom climate, educational track, peer context, and parental encouragement. At the postsecondary level, however, such attention to the proximal has been largely missing. Although many analysts have examined the attainment-related effects of postsecondary institutions as a whole (e.g., see Thistlethwaite, 1960; Solmon, 1975; Alwin, 1974), very few have addressed the possible role of postsecondary students' "micro-level" interactions, environments, and credentials in explaining educational aspirations, plans, or attainment.[1] Why that focus is important, and why it is adopted for this study, are discussed below.

Educational attainment research moved in the sixties and seventies from examining simple correlations between students' personal background characteristics and educational accomplishments (e.g., highest degree earned) to assessing the roles played by the specific characteristics of secondary schools in encouraging further education, net of the roles of other factors. The new attention in the sixties and seventies to the causal influences of schooling particulars was appropriate and overdue, but other developments in that era began to suggest raising the focal level of schooling for these analyses.

First, the average educational attainment levels of American youth were

rising somewhat, especially among lower-SES, minority, and women students (see NCES, 1982). This trend suggests that the postsecondary system was becoming more critical as a "battleground" for status distinctions in the society, relative to the secondary system. If one accepts the notion that the educational system as a whole serves to reproduce certain inequalities (class, gender, race) for the society (see Bourdieu, 1977; Bowles and Gintis, 1976), then it seems some of the primary technology of that process was being shifted into the postsecondary sector (see Clark, 1960; Karabel, 1972). Second, the range of educational options that could be called "postsecondary education" was expanding greatly in the sixties and seventies, making the available educational destinations beyond high school no longer quite so clearcut, selective, and uniform as before (NCES, 1982). Compared to the 1950's, the ensuing decades brought unprecedented levels of access. Virtually any high school graduate could enter some part of the postsecondary system, and that system's growing diversity increased in turn the diversity of occupational outcomes among postsecondary degree-holders, compared to earlier eras. Thus, in sum, the attainment of a postsecondary degree per se seems to have become in recent years less critical as a status differentiator in American society. Instead, the specific nature of the degree appears more important.[2]

For educational attainment research, these changes in the recent past pose a fourfold challenge. There is a need for a) paying more attention to educational attainment patterns after postsecondary education, and to the causation of these patterns in the college years, b) discriminating more systematically among postsecondary education institutions when conducting across-school analyses, since the societal niches of even seemingly similar institutions may differ in very significant ways (see Meyer, 1977)[3], c) studying the institution-wide

characteristics of postsecondary settings within types, and the experiences these characteristics engender, in as much breadth and depth as earlier research has studied these aspects of secondary schools, and d) differentiating student experiences within institutions in research designs, since the experiences of students in different majors within an institution may be substantially different from those of students in other majors. The critical causal agents in much of postsecondary education's impacts on students may lie not at the level of the institutional environment as a whole (e.g., "college quality") but instead at the level of the more proximal environments, particularly the peers and faculty in the major area (see Feldman and Newcomb, 1969; Vreeland and Bidwell, 1966)[4]. The present research was aimed toward meeting objectives a and d, in particular.

The research was also aimed toward a third objective: closer examination of sex differences in postsecondary experiences and accomplishments. While other analysts have examined the workings of the postsecondary system in reproducing class and racial inequalities in attainment (see Karabel, 1972; Pincus, 1980; Hearn, 1984), there has been appreciably less attention to the issue of gender inequalities. Women are now entering college at rates equal to or greater than those of men, yet their distribution into professions and jobs remains disproportionately concentrated in the lower paying, lower status areas (Heyns and Bird, 1982). Further investigation of the distinctive details of postsecondary experiences of men and women may lead to significant clues regarding the causation of these patterns.

There is already potent basis for believing the process of educational attainment varies significantly by gender. For example, there is evidence that women's attainments compared to men's are related less closely to school

achievements and more closely to parental SES (see Marini and Greenberger, 1978; Thomas et al., 1979; and the review by Rosenfeld, 1980), are more sensitive to levels of faculty supportiveness (see Phelan, 1979; Hearn, 1980; Hearn and Olzak, 1981), are sensitive to somewhat different kinds of faculty supportiveness (Pascarella and Terenzini, 1979), and are acted upon within significantly different areas of educational specializations (NCES, 1982; Bielby, 1978). There is also evidence that women have historically entered college with significantly lower levels of educational aspirations, implying a potential for the sexes reacting differently to similar kinds of educational experiences (see, for example, Patterson, 1976).

Theoretical Framework

This paper proposes a model for the longitudinal study of impacts on undergraduates' educational aspirations and plans. Although the model focuses upon aspirations and plans, the ultimate concern is with educational attainment, a variable assumed to be preceded chronologically and causally by aspirations and plans. Because of the consistency and importance of the previous findings regarding sex differences in educational attainment processes (see above), empirical tests of the model are best specified separately by sex. The model has six causally ordered components: a background component, a major department context component, a student experience component, a personal achievement component, a component consisting solely of senior-year educational aspirations, and a component consisting solely of senior-year plans for graduate or professional education immediately following the undergraduate years.

Educational plans, the sixth component, indicate the actual behavioral salience of the attitudinally based fifth component, educational aspirations. Plans are thus hypothesized to be explained by the preceding five components,

and educational aspirations, the fifth component, are hypothesized to be explained by the preceding four components. The variables within each of those four components, and the hypothesized causal significance of these variables for educational aspirations and plans, are discussed below.

Among the variables essential to the background component of the model are freshman-year educational aspirations, grade-point average, self-concept, and parental socio-economic status. Each is hypothesized to have a positive influence on eventual aspirations and plans. Evidence from a number of sources suggests the influences of initial aspirations and grades are substantially stronger than those of self-concept and parental SES, however (see especially Presley, 1982; Patterson, 1976; Spaeth and Greeley, 1970). The fifth background variable, sex, is considered empirically by way of separate analyses of male and female samples.

The major department context component is second in the causal ordering. It consists of variables relating to the overall levels of faculty supportiveness to students, departmental grading practices, and the occupational linkages of the bachelor's degree in the major discipline to the larger society and economy. A number of studies have identified the major area as a significant locus of educational impacts (see Feldman and Newcomb, 1969). In particular, Weidman (1978) found significant impacts on student values, Hartnett and Centra (1977) found significant departmental differences in impacts on student intellectual achievement, Hearn and Olzak (1981) found significant effects on academic satisfaction, and Pascarella (1980) found strong suggestions of faculty influences on educational aspirations in his comprehensive literature review. Studies focussing on various aspects of the social climates of major departments have been supplemented by hints that the grading climate of departments may also have

impacts (see especially Thistlethwaite, 1960). To the extent a department tends to reward student performance with high grades, we can expect aspirations and plans relating to that discipline to be buffered from falling. In sum, a supportive, rewarding department seems especially likely to produce higher aspirations and attainment.

Departments also differ in the kinds of linkages they have to the larger social structure. Those with certifying power into high paying, prestigious occupational areas may actually discourage further education (see, for example, Wilson, 1978). One way they may do so is through the presence in classrooms and labs of students about to enter jobs. Such students and their friends may give a department a dampening effect on educational aspirations and plans. Older peers may paint pictures of near-term occupational rewards that are difficult for younger students to resist (see, for example, Wallace, 1965). Even more important than these discipline-specific peer effects, however, may be the effects of faculty socialization of students into certain kinds of occupationally specific values and aspirations (Vreeland and Bidwell, 1966; Weidman, 1978; Pascarella, 1980; Presley, 1982). Majors having immediate and reasonably assured status or certification "payoffs" may therefore actively discourage further education in several ways.

At the third level in the causal model is the student experience component. This component features variables which tap students' individual career-related experiences over the three years succeeding the freshman year (sophomore to senior). Included are such factors as the perceived parental support for the student's career plans, the student's own individual perception of departmental faculty's supportiveness (as opposed to aggregated perceptions of supportiveness), the extent of the student's involvement in professors' research projects, and the

extent to which the student discussed career plans or personal problems with faculty members. Theoretical rationale and empirical evidence for the role of parental support in students' educational attainments have come from Sewell and Shah (1968), in studies relating to undergraduate attendance, and from Astin (1969) and Rossi and Calderwood (1973) in studies relating to graduate and professional school attendance. Evidence favoring the hypothesis that various kinds of supportive individual interactions with faculty members can have positive effects on educational attainments and plans has come from a variety of sources (see especially Pascarella, Terenzini, and Hibel, 1978; Pascarella and Terenzini, 1979; Pascarella, 1980; Phelan, 1979; and Wilson et al., 1975).

Fourth in the causal model is the personal achievement component, consisting of variables assessing the student's overall grades for the four years and self-concept in the senior year. The influences of both of these variables on aspirations and plans are hypothesized to be positive, grades being positive because of their capability for reinforcing notions of competence and further advancement in a discipline (see Patterson, 1976; Spaeth, 1968; Astin, 1977), and self-concept being positive because of its relationship to perceived ability to attain in the educational and occupational spheres.

Research Design

Although the above model and hypotheses are based in a reasonably consistent body of previous research, the specific kind of study required to test them has not been conducted. First, the earlier research has generally not focused on the department as a salient factor in the attainment-related outcomes considered here. The growing body of research implying significant department-level influences on students has not yet been fully reflected in the educational

attainment research tradition. Second, the contemporary relevance of the earlier research has been compromised by samples of limited generalizability. Not only have many studies focused only on males or only on especially bright undergraduates, but also the data used in virtually all the earlier studies have become quite dated, given the significant changes in postsecondary education outlined earlier in this paper. Third, the research has sometimes lacked true longitudinal quality, a necessity in studying "impact." A lack of adequate controls for the wide range of background characteristics relevant to attainment processes has been an especially troubling problem. The present research was designed to address each of these concerns.

Methods: As suggested by the proposed model, the empirical analysis focused on two central dependent variables: college seniors' educational aspirations and their educational plans. The analysis employed stepwise multiple regression techniques, including commonality analysis (see Kerlinger and Pedhazur, 1973), to assess the unique, shared, and total portions of variance explained by the six different variable components. Inferences regarding direct and indirect effects of different factors may thus legitimately be made. The analysis was conducted separately for men and women.

Data: The sample was drawn from the undergraduate student bodies at two universities, one large, rural, and public and the other smaller, urban, and church-affiliated. The sampled students responded to freshman (1972) and senior (1976) year questionnaires developed by Rudolf Moos and his colleagues (see Moos, 1979, for an extensive description of the survey design and response rates). The College Experiences Questionnaire (CEQ) was administered in the Spring of 1973 in freshman living units and was completed by the majority of the 1972-73 freshman class at the two institutions. The College Experience

Questionnaire: 1976 update (CEQ:76) was mailed to those seniors who had completed the CEQ as freshmen. Over 85% returned a completed questionnaire.

Included in the present study were the 404 students (190 males and 214 females) who were majoring in departments having at least ten senior respondents (to provide statistically acceptable indicators of such aspects of department context as consensus perceptions of department climates). The specifics of the various individual and department-level indicators employed are described below. Each of these indicators is relatively straightforward and has been used before in published research (see especially Moos, 1979; Hearn, 1980; Hearn and Olzak, 1981).

Variables and Their Indicators: Because lower SES students may select and experience college contexts differently from higher SES students (Davis, 1965), parental socio-economic status was used as a background control. The indicator of head-of-house SES is the Hollingshead (1957) seven-point occupational status index, reverse-coded. The other indicators in the background variables component are indicators of the freshman year aspirations level ("the highest academic degree that you intend to obtain," where 1=none, 2=associate or equivalent, 3=bachelors, 4=masters or law, 5=Ph.D., D.D.S., M.D. or other doctoral); the official freshman year Grade Point Average (on a four-point scale where A=4, B=3, C=2, D=1, F=0); and the freshman year self concept. The indicator of self-concept in the freshman year is based on a scale of six self-description items. The possible answers to the question "Indicate how well the term describes how you see yourself" are arrayed along a four point scale where 1="not at all," 2="somewhat," 3="moderately well," and 4="accurately." The six included items are "cooperative," "outgoing," "poised," "easy-going," "energetic," and "happy."

In the departmental context component are indicators relating to social climate, grading practices, and structural linkages to the larger occupational

system. The indicator for aggregate perception of departmental student-orientation was derived from CEQ:76 items formulated to tap the student's perception of the social climate of his or her major department. Students responded on four-point scales ("Hardly ever true," "Occasionally true," "Frequently true," or "Almost always true") with respect to seven characteristics of their major professors. These seven perception items were combined into the Department Student-Orientation Scale: "Help and support students," "Provide opportunities for social interactions with students majoring in the department," "Engage students in stimulating discussions," "Clearly explain departmental rules and requirements," "Encourage students to become involved in their work," "Respond to student grievances over departmental issues," and "emphasize variety and new approaches in student work." Analyses of variance of student responses to these items reveal significant differences ($p \leq .05$) between departments on the scale itself and on each of the seven items alone. For the aggregate climate indicators, each student in an eligible senior year major was assigned the mean scale score for his or her major department (as perceived by the student and fellow majors).

Departmental grading practices are indicated by the average of self-reported G.P.A's in courses in the department for all seniors majoring in the department. The responses students made were to a seven-point item, where 1=less than 1.25 (D or less on the schools' four-point grading scale), 2=1.25-1.74 (C- or D+), 3=1.75-2.24 (C), 4=2.25-2.74 (C+ or B-), 5=2.75-3.24 (B), 6=3.25-3.74 (B+ or A-), 7=3.75-4.00 (A or A+).

The structural niche of the departmental major in the occupational system is indicated by three dummies. These dummies are assigned to majors on the basis of 1) their status rewards in the larger occupational system, as detailed

in survey research of prospective employers by Wilson (1978), and 2) their articulation with specific occupations in the larger society, as detailed by Hearn and Olzak (1981). For the regressions, the comparison group consists of those majors having lower occupational status rewards and weaker links to specific occupations, such as the majors in art, history, and English. The three indicators included in the regressions are thus those for majors with lowest status rewards but close links (e.g., physical education, consumer science), those with higher status rewards but weak links (e.g., biology, zoology), and those with higher status rewards and close links (e.g. chemical engineering, economics).

The individual experiences component contains indicators of individual perceptions of department student-orientation, parental supportiveness of career plans, research experiences, and faculty contacts. For the indicator of the student's individual perception of departmental student-orientation, a relative-deviation term was devised. This indicator is equal to the student's individually-perceived Department Student-Orientation Scale score minus the consensus scale score for his or her major department. Parental support is indicated by a scale of the perceived responses of the student's mother and father, respectively, to the student's career choice, as reported by the student on the CEQ:76. The scale averaged the responses on the two five-point items, from "Strongly discouraged me" (a score of 1) to "Strongly encouraged me" (a score of 5). "Worked on an individual research project" is indicated by a dummy item (1=yes, 0=no), as is "Worked on a professor's research project," "Discussed career plans with a professor" and "Discussed personal problems with a professor" are also indicated by dichotomies (2=yes, 1=not).

The personal achievement component contains two indicators. The first is

for overall Grade Point Average, as reported by the student in the senior year. The 1 to 7 scaling of this item is the same as that described above for the indicator of average G.P.A. in the major departments. The second indicator is for senior year self-concept. This is a scale composed of the same items as those in the self-concept scale in the background variables component, the difference being that this scale is based on senior year responses.

The senior year aspirations component consists of the students' senior year responses to a question phrased and scored exactly the same as the freshman aspirations item. The educational plans component is based in the students' responses in the spring of their senior year to the following yes-no question: "Have you applied to graduate or professional school?"[5]

Each of the scales in the analysis exhibits satisfactory psychometric properties. Specifically, in each case, Cronbach's alpha exceeds .55.

Results

Table 1 presents the means and standard deviations for the sample. Both men's and women's aspiration levels rose over the four years. While men's aspirations were higher in both the freshman and senior year, they rose somewhat less than women's. The only other notable difference in the means for the two groups was in major choices: men were far more likely to major in the areas with higher occupational status rewards. This greater tendency of males to major in engineering and the various hard sciences was expected, although more recent samples reveal some attenuation in sex differences in major choices (see NCES, 1982). The student means on the SES, aspiration, and graduate school plans indicators suggest above-average selectivity and socioeconomic composition at the two sample institutions.

[Insert Table 1 about here]

Table 2 shows the regression results for senior-year educational aspirations. Four causally ordered equations are presented for each sex. Among the males, grades and initial aspirations level were consistently important factors. This finding is in keeping with the hypotheses and with previous research on the topic. Interestingly, the influence of freshman grades seems to be mediated through overall grades for the college years, suggesting a process dependent upon ongoing reinforcement of self-perceptions regarding ability. Also in keeping with the hypotheses is the finding that men entering the higher status rewards/closely linked departments tended to lower their educational aspirations over the years, since those departments can offer significant occupational rewards without the need for further education. As that capability becomes clearer over the college years, students' desire or felt need for graduate or professional education may decay. The results also support the expectation that work on a research project of one's own can increase the desire of men for further education. Among the variable indicators with no measurable effects were departmental grading practices, departmental student-orientation, parental SES, parental career support, disussions with family, and student self-concept.

[Insert Table 2 about here]

The regression results for women were different from those of the men in several respects. First the explanatory power of the model was appreciably less (a final R^2 of .25, as opposed to .32 among the men). Second, there were no significant effects from any of the departmental context indicators. Third, freshman grades played no role in final aspirations in any of the four equations,

although overall grades did indeed do so. Fourth, the only individual experience indicator of import was that for parental support of the student's career choice. As with the males, there were no significant effects of parental SES, departmental grading practices, departmental climate, discussions with faculty, or student self-concept.

Table 3 employs commonality analysis to assess the results of Table 2 from another perspective. The data reveal substantially more sharing of effects among the various blocks for the males, compared to the females. Whereas only 18 percent of the total R^2 is shared by blocks in the results for the women's sample, a full 53 percent is shared in the men's results. In addition, the unique and shared effects of the contextual (departmental) variables were relatively greater among the men than the women. These differences seem to center on the load carried uniquely by the background variable component: this load was proportionately far greater among the women than the men. Nevertheless, the proportion of total R^2 explained by the unique and shared R^2 for the background variables was 62 percent for the men and 66 percent for the women, suggesting that for both sexes events occurring after the freshman year account for over one-third of the explained variance in the model, independent of the unique and shared role of background factors.

[Insert Table 3 about here]

Table 4 presents the regression results for immediate graduate school plans among the sampled students. For the men, it is striking that in none of the equations were there any effects of freshman-year aspirations. Only senior-year aspirations were significant. Also of interest is the pattern of effects of grades. In equations 1 through 3, freshman grades are significant, but this

effect disappears in equation 4, which adds the overall grades indicator. In equation 5, however, both of the grades effects disappear, seemingly due to the inclusion of senior-year aspirations. Thus there seems to have been a causal linkage between grades and aspirations in determining plans. Four other significant variables show little evidence of mediation, however: there were positive effects from liberal departmental grading practices, parental support of career choice, and discussing career plans with faculty, and there was a negative effect from the freshman self-concept. The latter effect is surprising in both its direction and the absence of a comparable senior year effect.

[Insert Table 4 about here]

The results for the women's graduate school plans are quite different in several respects from those of the men. There were quite significant effects from parental support and from the higher status/weakly linked departments, and no effects from grades, departmental grading practices, or discussions with professors. While there was a small, passing effect from freshmen self-concept in equations 2 and 3, it was positive, whereas the effect in the male sample was negative. Also, the explained variance for the model was appreciably lower for the women (.29) compared to the men (.44). Like the men, however, the effects of senior year aspirations were strong and there were no effects of freshman year aspirations. Also like the men, there were no effects from parental SES, departmental climate, or work on research projects.

Table 5 presents a commonality analysis of the results of Table 4. The patterns here are similar to those for the aspirations commonality analysis in that there is far more evidence of sharing among the variable blocks in the men's data. In particular, the senior-year aspirations indicator carried a

great deal more unique power for the women than the men. The greater sharing (indirect effects) in the male analysis is especially striking for the "shared among three or more blocks" category of the table: fully 35 percent of the explained variance for the males is carried this way, while the comparable figure for the women was only 5 percent. The one area of notable sharing among the women was between the individual experience and senior aspirations indicators. Despite these differences, one can conclude on the basis of the total variance explained by the background block that graduate school plans are largely determined after the freshman year. Approximately 58 percent of the explained variance for the males and 83 percent for the females was explained by factors independent of the background block.

[Insert Table 5 about here]

Discussion

The results for the causal model employed here suggest that academic performance, parental supportiveness, and major department context play significant roles in the educational aspirations and plans of graduating college men, beyond the role played by the men's freshman year background characteristics. Among graduating college women, the roles of academic performance and the major department context were less significant than among the males, but the role of parental supportiveness was more significant. For both groups, and for both outcome variables, the role of background factors (freshman year characteristics) was significant but modest. The absence of any significant impacts relating to socioeconomic status was particularly striking.

It should be borne in mind that these are the results of an exploratory study. Importantly, only two institutions were studied (Brown, 1982, found

significant differences in the effects of different colleges on women's career-related outcomes). Furthermore, the sample showed only limited variation across SES-levels and was already self-selected by the institutions, both of which are moderately selective. Thus, one reason that freshman-year background factors did not play a larger role in either the male or female results may well be the composition of sample. Finally, aspirations and plans rather than actual post-college attainment patterns were assessed, and the survey instruments were designed for other purposes than those pursued here.

Less exploratory analyses at both similar and dissimilar types of institutions seem clearly warranted, given the findings here of apparent micro-level effects on educational aspirations and plans. For example, further analyses might attempt to operationalize academic ability and self-concept more precisely, given the theoretical importance of these factors. Further analyses might also assess whether the lack of powerful grades effects in some of the work reported here might be an artifact due to the relative selectivity and homogeneity of the sample employed. If not, the present results for grades assume greater significance.

Despite the tentativeness of the analysis reported here, three patterns in the results deserve more extended, albeit more speculative, discussion. First, the stark differences in the results for men and women argue strongly for greater attention to gender differences in post-college educational attainment processes. In other attainment research, differences between men and women have often tended to follow the general scenario of achievement-driven causal patterns among men and social support and status-driven causal patterns among women (see Rosenfeld, 1980; McDill and Rigsby, 1974; Phelan, 1979; and others). Here,

only part of that pattern holds. Achievement-related factors (particularly college grades) were indeed more significant for men than for women, but the data for women showed no powerful effects of parental socioeconomic status. There were, as expected, especially significant impacts of parental support for women, but faculty contact seemed to play no independent role. The mystery produced by the current analysis lies therefore in the nature of a more appropriate causal model for women. This is clearly an issue for further research.

One hint as to the appropriate nature of that research lies in the results for graduate school plans. In contrast to the men, the women showed little evidence that the decision to enter graduate school immediately after the undergraduate years was based in a predictable sequence dating back to the freshman year: there were no effects from either freshman year grades or freshman year aspirations. We can speculate that for women, the attainment process in these years may be more contingent on year-to-year developments than for men. Aspirations may follow chronological patterns similar to those for men, but actual behavior may be far more subject to disruptions.[6]

Second, the absence of effects for the consensus or individual-perception social climate indicators here is intriguing. The bulk of research in this area has suggested that supportive social climates in settings like dorms, classrooms and academic departments can have favorable educational impacts (see Moos, 1979; Hearn, 1980). The present evidence suggests that educational aspirations and plans are affected by personalized interactions with parents and individual professors, but not by the supportiveness of the overall climate. Indeed, the direction of the signs for the indicator of overall department supportiveness was rather consistently negative and quite nearly significant (the exception being the equations for women's graduate school plans). While this evidence may

be an artifact of the correlation of departmental supportiveness with majors whose occupational connections make them less likely to send students on to graduate or professional schools (see Hearn, 1981), it could also indicate a negative relation between supportiveness and the level of intellectual challenge and excitement generated. This hypothesis has been suggested by others (see Hamblin and Smith, 1966; Moos, 1979) and would seem to merit attention from theorists and practitioners alike.

Third, those variables that did have measurable impacts suggest some implications for educational policy and administration. In an era marked by both increasing national attention to educational quality and increasing national concern over student surpluses and shortages in various graduate degree programs, investigation of the factors prompting further educational attendance beyond the postsecondary years seems clearly warranted. The results here provide some tentative guidelines for further work on the issue. For example, the negative effects of freshman self-concept on the graduate school plans of men, in the absence of any effects of the senior self-concept of those men, hint at reinforcements and social development as factors in post-baccalaureate educational attainment. In other words, those socially insecure men who experience rewards in the academic life in their undergraduate years may seek to remain in academic settings further in order to continue to obtain those rewards. Whether those rewards are developmental in nature or simply represent nurturing of the men's existing interpersonal styles is an issue for further analysis. From a policy perspective, delving into the specifics of this unusual finding might promote a fuller understanding of the more subtle aspects of recruitment into academic and professional life.

In addition, the positive effects for womens' graduate school plans from

being in a weakly linked major with higher occupational status rewards merit further attention. These women may have been perceiving a need to have both certification and status prior to entering the job markets. In other words, they may not have seen the status rewards of majors as operating quite as powerfully for them as they do for men. Alternatively, the findings may have been due simply to teaching plans among women in the basic sciences. If the finding is not artifactual, it provides support for the notion that women's vocational desires are more consciously constrained than men's by the perceived dynamics of labor markets.

Whatever the outcomes of the further analyses suggested here, the power of the present results should provide a clear impetus to such work. The study found well over one-half of the variance-explained for graduate school attendance, and over one-third of the variance-explained for educational aspirations, to be due to factors not associated with students' freshman year characteristics. In other words, it at least seems that colleges are indeed influencing both students' global educational aspirations and their immediate graduate school plans, not simply reinforcing and channeling earlier plans and directions. Of course, the "impacts" found here are not highly significant in statistical terms, and they tend to occur mainly among the males. Nevertheless, the findings qualify earlier conclusions by several other college impact researchers. Perhaps they also help confirm the suspicions of some administrators and faculty that their day-by-day activities are far from insignificant.

FOOTNOTES

1. The effects of proximal factors in postsecondary settings on income attainments (rather than aspirations and plans) have indeed been addressed, however. Notable in this tradition is Wilson's (1978) study of the effects of particular major-area degrees on income patterns. Wilson's work raises a critical point regarding the present paper: the use of the term "proximal" here to describe certain factors is not meant to exclude the structurally-based aspects of those factors. For example, the attainment-related effects of major departments may lie as much in credentialling as in training and socialization.

2. The point has been stated eloquently by Jerome Karabel and Alexander Astin (1975, page 381): "As more and more students enter higher education, the college/non-college dichotomy will become increasingly anachronistic and the sorting of people within higher education will take on even greater importance." Several analyses from a human-capital perspective have reinforced this view. Major fields do vary appreciably in their income payoffs, particularly in the short term, and students seem to take these variations into account in making their choices (see Solmon, 1981; Freiden and Staaf, 1973; Ferber and McMahon, 1979; Cebula and Lopes, 1982).

3. For example, it is sometimes assumed that there is appreciable substantive meaning to the concept "publicly-supported university." Yet consider Howard University, Berkeley, and Texas A & M. Each is legally and societally chartered, to use Meyer's term (1977), in a quite distinctive way.

4. A number of studies have examined the effects of the overall quality of one's undergraduate college on eventual occupational status and income (see Trusheim and Crouse, 1981; Alwin, 1974; Tinto, 1980; Solmon, 1975). Several of these efforts, as part of their general models, have considered the effects

of overall undergraduate college quality on the quality or years of graduate and professional education. To my knowledge, however, none has focused on the effects of experiences in undergraduate-level subenvironments, such as the major department.

5. The use of a dichotomous dependent variable for standard multiple regresion analysis runs the risk of biasing the error term in the equation, due to the constrained ("lumpy") nature of the dependent variable distribution. In other words, the homoskedasticity assumption is violated. Neither the coefficients for the independent variables, nor the assessments of the unique and shared explanatory power of those variables, will be biased, but the approach may slightly mis-estimate the statistical significance of the results. This problem is least worrisome when the distribution of the dependent variable is relatively close to a 50/50 split (see Gillespie, 1977). Such is the case for the dichotomous educational plans indicator in the present study (see Table 1).

6. Both Helen Astin (1968) and Marsha Brown (1978) have noted greater instability in young women's career choice patterns, relative to those of young men. Astin examined students in their high school years. Brown studied college students.

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Table 1: Indicator Means, Standard Deviations, and Intercorrelations for the Male (n=190) and the Female (n=214) Samples

	Mean	Standard Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Mean	Standard Deviation
1. Occupational Status of Head of Family	5.77	1.39		-.05	-.05	.02	-.07	-.05	-.17	.13	-.00	-.00	.02	-.07	-.15	-.01	-.07	-.02	-.01	.05	.09	5.84	1.29
2. Freshman Year Grade Point Average	2.88	.50	-.02		-.06	.07	-.11	.21	-.00	.06	-.00	-.02	.01	-.00	.15	.09	.08	.72	-.09	.12	.13	2.92	.49
3. Freshman Year Self-Concept	2.90	.49	.01	-.23		.09	.09	.03	.07	-.11	-.13	.09	.08	.05	-.05	-.01	.13	.05	.61	.13	.13	2.97	.49
4. Freshman Year Educational Aspirations	4.26	.89	-.11	.20	-.06		-.03	-.07	-.08	.26	-.15	-.00	.09	.08	.11	.09	.05	.03	.04	.37	.18	3.65	.81
5. Departmental Student Orientation	2.44	.26	.04	-.14	.09	-.06		.44	.52	-.51	-.22	.11	-.02	.07	-.17	.05	.07	-.00	.11	-.09	.00	2.56	.28
6. Departmental Grading Average	3.57	.28	-.08	.20	.10	.13	.20		.22	-.21	-.09	.03	-.05	.07	-.06	-.01	.02	.20	.05	-.07	.06	3.57	.31
7. Lower Status Rewards/Closely Linked Dept.	.15	.36	-.04	-.11	.12	.02	.46	.08		-.43	-.27	.02	-.03	-.04	.02	.01	-.01	-.02	.07	-.07	.01	.42	.49
8. Higher Status Rewards/Weakly Linked Dept.	.35	.48	-.23	.17	-.17	.26	-.26	.03	-.31		-.16	-.13	-.01	-.01	.12	.01	-.08	.11	-.16	.09	.17	.20	.40
9. Higher Status Rewards/Closely Linked Dept.	.33	.47	.19	-.08	.03	-.28	-.34	-.22	-.29	-.51		.14	.07	-.04	-.15	.00	.01	-.05	.01	-.02	-.01	.09	.29
10. Parental Support of Career Choice	3.86	.85	.01	-.04	.08	.11	-.05	.02	.01	.02	-.08		.06	.01	.00	.09	.09	.01	.20	.17	.28	3.87	.77
11. Individ. Perception of Dept. Student Orient.	-.04	.51	.06	.06	.06	-.06	-.03	.01	-.05	-.07	.05	.13		.17	.02	.19	.14	.10	.16	.09	.02	.04	.52
12. Individual Research Project	.38	.49	.17	.01	-.04	.04	-.04	.21	.07	-.12	-.03	.07	.05		.05	.13	.08	-.01	.10	.04	-.01	.38	.49
13. Professor's Research Project	.27	.44	-.08	.01	-.08	-.04	.04	-.05	.12	.17	-.17	.03	.13	.19		.16	.07	.09	-.03	.13	.04	.27	.44
14. Discussed Career Plans with Professor	1.82	.39	-.01	.27	-.04	.14	.04	.14	-.03	.07	-.07	.05	.04	.18	.13		.19	.12	.13	.14	.05	1.78	.41
15. Discussed Personal Problems with Professor	1.12	.32	.07	-.09	.01	-.10	.18	.05	-.06	-.13	-.01	-.11	.17	-.01	.04	.13		.09	.06	.18	-.00	1.15	.36
16. Overall Grade Point Average	3.23	.82	.02	.76	-.20	.19	-.05	.17	-.15	.18	-.07	.06	.07	.08	.05	.30	-.06		-.00	.38	.16	3.19	.85
17. Senior Year Self-Concept	3.01	.66	-.09	-.15	.53	-.14	.01	.06	-.02	-.06	-.01	.10	.15	.05	-.02	-.01	.01	-.10		.13	.16	3.03	.66
18. Senior Year Educational Aspirations	4.38	.76	.00	.35	-.16	.38	-.10	.09	-.12	.23	-.25	.13	.13	.21	.10	.25	.06	.41	-.09		.39	3.83	.69
19. Graduate School Plans	.46	.50	-.08	.37	-.24	.21	-.07	.25	-.05	.25	-.23	.16	-.06	.17	.02	.30	-.07	.41	-.13	.52		.44	.50

Note: Male data are to the left of the diagonal, female data to the right. See text for indicator definitions.

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Table 2: Regression Results
for Senior Year Educational Aspirations

	Male Sample (n=190)				Female Sample (n=214)			
	Equation 1	Equation 2	Equation 3	Equation 4	Equation 1	Equation 2	Equation 3	Equation 4
Background Variables								
Occupational Status of Head of Family	.04	.07	.02	.02	.05	.05	.06	.06
Freshman Year Grade Point Average	.27***	.25***	.24***	.05	.11	.11	.08	-.07
Freshman Year Self-Concept	-.09	-.07	-.07	-.05	.11	.12	.09	.04
Freshman Year Educational Aspirations	.33***	.28***	.27***	.26***	.35***	.36***	.34***	.36***
Contextual Variables								
Departmental Student-Orientation		-.09	-.05	-.10		-.07	-.10	-.13
Departmental Grading Average		-.02	-.07	-.07		-.05	-.03	-.04
Lower Status Rewards/Closely Linked Dept.		-.16	-.14	-.12		-.00	.01	.02
Higher Status Rewards/Weakly Linked Dept.		-.10	-.03	-.06		-.05	-.03	-.07
Higher Status Rewards/Closely Linked Dept.		-.29**	-.22*	-.25*		.02	.00	-.00
Individual Experience Variables								
Parental Support of Career Choice			.08	.06			.15*	.15*
Individual Perception of Departmental Student-Orientation			.10	.10			.01	-.01
Individual Research Project			.17*	.15*			-.01	.00
Professor's Research Project			.03	.02			.06	.06
Discussed Career Plans with Professor			.09	.07			.06	.04
Discussed Personal Problems with Professor			.07	.07			.12	.12
Personal Achievement Variables								
Overall Grade Point Average				.26**				.21*
Senior Year Self-Concept				-.02				.05
R^2	.23	.28	.35	.37	.16	.17	.23	.25
F	13.94***	7.74***	6.21***	6.04***	10.15***	4.74***	3.85***	3.78***

Note: *p < .05, **p ≤ .01, *** p≤ .001. Standardized coefficients are reported.

Table 3

Partitioning of the Explained Variance for Educational Aspirations
(% of Total R^2)

	Male Sample	Female Sample
UNIQUE R^2		
Background Variables (B)	16%	48%
Contextual Variables (C)	11	6
Individual Experience Variables (IE)	14	19
Personal Achievement Variables (PA)	5	8
SHARED R^2		
B with C	10	2
B with IE	1	5
B with PA	18	4
C with IE	2	0
C with PA	0	0
IE with PA	2	3
Shared among three or more blocks	20	4
TOTAL R^2	100%	100%
TOTAL UNIQUE TO INDIVIDUAL BLOCKS	47	82
TOTAL SHARED BY BLOCKS	53	18
TOTAL UNIQUE AND SHARED B	62	66
TOTAL UNIQUE AND SHARED C	32	5
TOTAL UNIQUE AND SHARED IE	31	32
TOTAL UNIQUE AND SHARED PA	47	20

NOTE: This table is based on a variety of blocked stepwise regressions for the sample and variables of Table 2. Specifically, the four variable blocks were entered in varying orders to determine their respective unique, shared, and total components of variance explained (R^2), using the approach presented by Kerlinger and Pedhazur (1973, 297-303). Totals do not always add due to rounding. Percentages are based on data four digits past the decimal point.

Table 4: Regression Results for Graduate School Plans

	Male Sample (n=190)					Female Sample (n=214)				
	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Background Variables										
Occupational Status of Head of Family	-.06	-.00	-.03	-.04	-.05	.10	.09	.09	.09	.07
Freshman Year Grade Point Average	.31***	.25***	.22**	.06	.04	.13	.13	.12	.08	.10
Freshman Year Self-Concept	-.17*	-.18**	-.18**	-.17*	-.15*	.13	.16*	.14*	.08	.06
Freshman Year Educational Aspirations	.13	.06	.01	.00	-.10	.08	.03	.02	.03	-.10
Contextual Variables										
Departmental Student-Orientation		-.09	-.06	-.10	-.06		.10	.08	.07	.12
Departmental Grading Average		.19**	.14*	.14*	.17**		.04	.05	.04	.05
Lower Status Rewards/Closely Linked Dept.		-.01	.00	.02	.06		.10	.10	.10	.10
Higher Status Rewards/Weakly Linked Dept.		.05	.10	.07	.09		.28**	.29***	.29***	.31***
Higher Status Rewards/Closely Linked Dept.		-.16	-.11	-.14	-.04		.11	.07	.06	.06
Individual Experience Variables										
Parental Support of Career Choice			.16*	.14*	.12*			.29***	.28***	.23***
Individual Perception of Departmental Student-Orientation			-.07	-.07	-.11			-.01	-.02	-.01
Individual Research Project			.12	.10	.05			-.02	-.02	-.02
Professor's Research Project			-.07	-.08	-.09			.03	.03	.01
Discussed Career Plans with Professor			.19**	.17*	.14*			.01	.00	-.02
Discussed Personal Problems with Professor			-.02	-.01	-.04			-.04	-.03	-.08
Personal Achievement Variables										
Overall Grade Point Average				.22*	.12				.07	-.01
Senior Year Self-Concept				-.03	-.02				.09	.08
Senior Year Aspirations Variable										
Senior Year Educational Aspirations					.39***					.37***
R^2	.19	.25	.33	.35	.44	.05	.10	.18	.19	.29
F	10.55***	6.69***	7.73***	5.44***	7.55***	2.71*	2.42*	2.90***	2.65***	4.47***

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001. Standardized coefficients are reported.

Table 5

Partitioning of the Explained Variance for Graduate School Plans
(% of Total R^2)

	Male Sample	Female Sample
UNIQUE R^2		
Background Variables (B)	6%	6%
Contextual Variables (C)	9	18
Individual Experience Variables (IE)	12	18
Personal Achievement Variables (PA)	1	1
Aspirations Variable (A)	21	36
SHARED R^2		
B with C	0	0
B with IE	0	1
B with PA	5	3
B with A	0	0
C with IE	2	0
C with PA	0	0
C with A	2	0
IE with PA	1	2
IE with A	2	8
PA with A	3	1
Shared among three or more blocks	35	5
TOTAL R^2	100%	100%
TOTAL UNIQUE TO INDIVIDUAL BLOCKS	49	80
TOTAL SHARED BY BLOCKS	51	20
TOTAL UNIQUE AND SHARED B	42	17
TOTAL UNIQUE AND SHARED C	31	18
TOTAL UNIQUE AND SHARED IE	31	28
TOTAL UNIQUE AND SHARED PA	41	17
TOTAL UNIQUE AND SHARED A	61	53

NOTE: This table is based on a variety of blocked stepwise regressions for the sample and variables of Table 3. See the Table 4 Note for procedural details.

Table 5

Partitioning of the Explained Variance for Graduate School Plans
(% of Total R^2)

	Male Sample	Female Sample
UNIQUE R^2		
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Contextual Variables (C)	9	18
Individual Experience Variables (IE)	12	18
Personal Achievement Variables (PA)	1	1
Aspirations Variable (A)	21	36
SHARED R^2		
B with C	0	0
B with IE	0	1
B with PA	5	3
B with A	0	0
C with IE	2	0
C with PA	0	0
C with A	2	0
IE with PA	1	2
IE with A	2	8
PA with A	3	1
Shared among three or more blocks	35	5
	100%	100%
TOTAL R^2		
TOTAL UNIQUE TO INDIVIDUAL BLOCKS	49	80
TOTAL SHARED BY BLOCKS	51	20
TOTAL UNIQUE AND SHARED B	42	17
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NOTE: This table is based on a variety of blocked stepwise regressions for the sample and variables of Table 3. See the Table 4 Note for procedural details.

Table 4: Regression Results for Graduate School Plans

	Male Sample (n=190)					Female Sample (n=214)				
	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Background Variables										
Occupational Status of Head of Family	-.06	-.00	-.03	-.04	-.05	.10	.09	.09	.09	.07
Freshman Year Grade Point Average	.31***	.25***	.22**	.06	.04	.13	.13	.12	.08	.10
Freshman Year Self-Concept	-.17*	-.18**	-.18**	-.17*	-.15*	.13	.16*	.14*	.08	.06
Freshman Year Educational Aspirations	.13	.06	.01	.00	-.10	.08	.03	.02	.03	-.10
Contextual Variables										
Departmental Student-Orientation		-.09	-.06	-.10	-.06		.10	.08	.07	.12
Departmental Grading Average		.19**	.14*	.14*	.17**		.04	.05	.04	.05
Lower Status Rewards/Closely Linked Dept.		-.01	.00	.02	.06		.10	.10	.10	.10
Higher Status Rewards/Weakly Linked Dept.		.05	.10	.07	.09		.28**	.29***	.29***	.31***
Higher Status Rewards/Closely Linked Dept.		-.16	-.11	-.14	-.04		.11	.07	.06	.06
Individual Experience Variables										
Parental Support of Career Choice			.16*	.14*	.12*			.29***	.28***	.23***
Individual Perception of Departmental Student-Orientation			-.07	-.07	-.11			-.01	-.02	-.01
Individual Research Project			.12	.10	.05			-.02	-.02	-.02
Professor's Research Project			-.07	-.08	-.09			.03	.03	.01
Discussed Career Plans with Professor			.19**	.17*	.14*			.01	.00	-.02
Discussed Personal Problems with Professor			-.02	-.01	-.04			-.04	-.03	-.08
Personal Achievement Variables										
Overall Grade Point Average				.22*	.12				.07	-.01
Senior Year Self-Concept				-.03	-.02				.09	.08
Senior Year Aspirations Variable										
Senior Year Educational Aspirations					.39***					.37***
R^2	.19	.25	.33	.35	.44	.05	.10	.18	.19	.29
F	10.35***	6.69***	5.73***	5.44***	7.55***	2.71*	2.42*	2.90***	2.65***	4.47***

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001. Standardized coefficients are reported.

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